

The Great Lakes Ecological and Economic Protection Act of 2015

Legislative Analysis and Program Design





Cover Photograph: Lloyd DeGrane, Alliance for the Great Lakes
Above Photograph: Sunrise on the shores of Lake Michigan. Photo courtesy of myheimu / Creative Commons.

The Great Lakes Ecological and Economic Protection Act of 2015: Legislative Analysis and Program Design

December 2015

Manager: Daniel Giddings
Deputy Manager: Rebecca Snyder

Team Members:

Dylan Adler
Katherine Altobello-Czescik
Michael D'Agostino
Stav Gilutz
Siyao Liu
Sejal Soni
Victoria Wagner Mastrobuono
Lauren Wolahan

Faculty Advisor: Professor Matthew Palmer

Executive Summary

As the largest reservoir of surface freshwater in North America, the five Great Lakes provide an enormous amount of economic, recreational, cultural and ecological services to 43 million local residents and visitors combined in the U.S. and Canada. Due to decades of intense industrial, agricultural and urban development, however, the ecological integrity of the Lakes has declined, threatening both human and wildlife health. Environmental degradation persists as a consequence of high nutrient inputs, toxic contamination, intrusion of invasive species and habitat destruction. The economic costs and public health risks associated with such environmental hazards are extensive, with annual monetary losses in the hundreds of millions due to aquatic invasive species alone. Other costs that burden state and local governments, municipalities, residents and visitors include contaminated drinking water sources, reduced fisheries, and a loss of recreation opportunities. These threats in aggregate could total in the billions of dollars each year, particularly if diminished environmental conditions continue or worsen.

This report presents an analysis of the ecological problems facing the Great Lakes region and the solutions proposed by the Great Lakes Ecological and Economic Protection Act of 2015, an introduced but not yet enacted bill in the United States Congress. It further analyzes the existing administration of the Great Lakes Restoration Initiative established during Phase I from 2010 through 2014, and recommends a program design for Phase II. Phase II of the Initiative, if authorized through the Act, would provide funding through 2020.

The Restoration Initiative strives to restore the health of the Great Lakes through a variety of projects led by different federal, state, local and tribal government agencies working in partnership with nonprofits, communities, academic institutions and other stakeholder organizations. These projects have produced significant improvements in the region's ecological health during Phase I of the Restoration Initiative. Phase II seeks to build upon these successes. The Act provides the U.S. Environmental Protection Agency with extended authority to manage comprehensive restoration efforts, authorizes an annual budget of \$475M for project implementation, and enhances coordination and transparency between all responsible government agencies. The Act was introduced by Senator Tammy Baldwin in February 2015 and was referred to the Senate Committee on Environment and Public Works. The bill has 10 cosponsors, including bipartisan support.

Table of Contents

Executive Summary.....	3
Background.....	5
Environmental Problem Areas.....	5
Elements of the Act.....	8
Political Obstacles.....	9
Program Design.....	10
Interagency Taskforce.....	10
The Great Lakes National Program Office.....	15
Advisory Board.....	18
Budgeting and Reporting.....	20
Data management and reporting.....	21
Implementation Calendar.....	22
Conclusion.....	22
References.....	24

Background

The Great Lakes consist of five interconnected lakes comprising the world's largest surface freshwater reservoir. The Great Lakes basin lies between the U.S. and Canada, bordering Minnesota, Wisconsin, Michigan, Ohio, Illinois, Indiana, New York, and Pennsylvania in the U.S., as well as the Province of Ontario in Canada. Located near several large metropolitan areas, nearly 30 million Americans and 13 million Canadians inhabit the Great Lakes Basin, accounting for 10% of the U.S. population and 30% of the Canadian population (EPA, 2012). The Great Lakes provide a variety of goods and services including food, drinking water, recreation and transportation. Over the years, extensive logging, industrialization, urbanization, and agriculture have degraded the Great Lakes' ecosystem (Great Lakes Interagency Task Force, 2010). Due to this intensive use, both historical and contemporary, the Great Lakes have been subject to extensive environmental damage, threatening human and ecological health and the economic prosperity of the region.

The Great Lakes Ecological and Economic Protection Act of 2015 (hereafter, "the Act") seeks to address past and current environmental harm. Phase I of the Restoration Initiative (2010-2014) spent over \$1.6 billion and funded over 2,500 projects to restore and maintain the Great Lakes (Great Lakes Restoration Initiative, 2014a). The Restoration Initiative fosters collaboration between federal, state, and local government agencies, among other stakeholder organizations, to address the most serious threats to environmental health and quality of life in the Great Lakes region.

Environmental Problem Areas:

To address the environmental issues facing the Great Lakes, the Act would fund restoration work through the continuation of Phase I programs and additional projects aimed at restoring the chemical, physical and biological integrity of the Great Lakes basin ecosystem (Figure 1). The Act would also support research on emerging contaminants and their impacts on fish and wildlife, economic and recreational activities while preventing damages from new invasive species. The following subsections provide overviews of the key issues and solutions for each problem area identified by the Restoration Initiative.

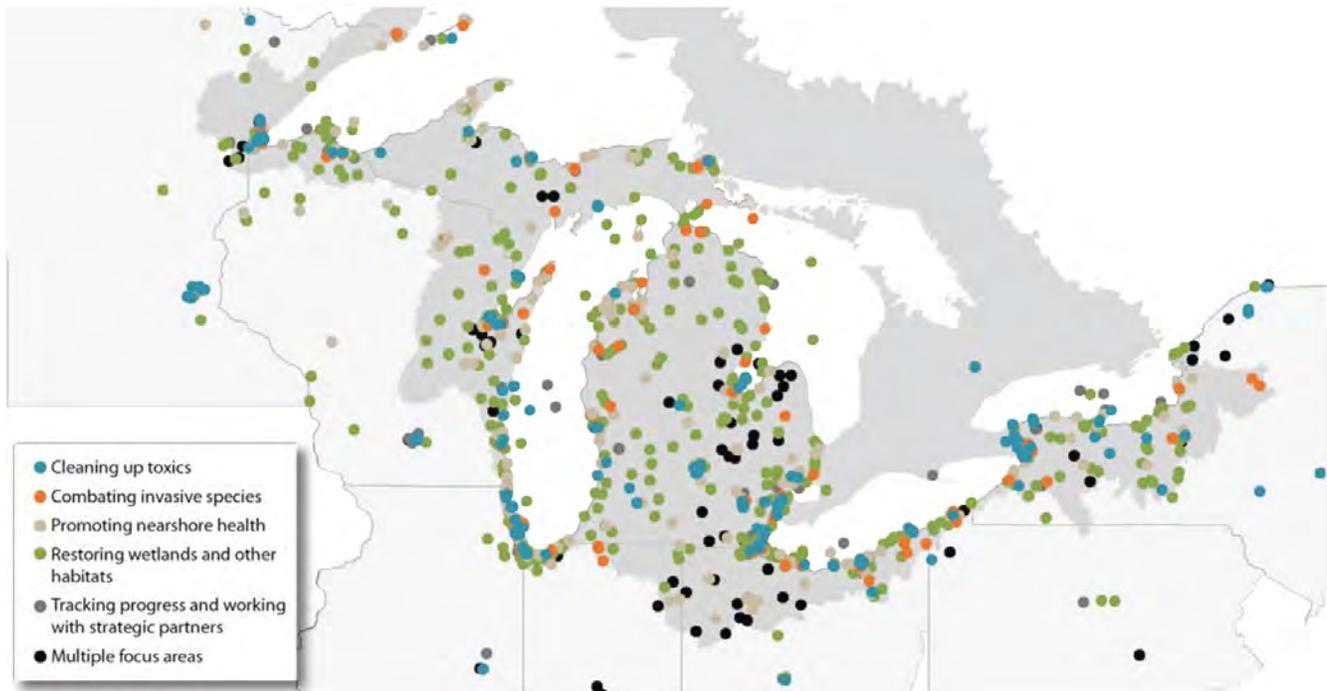


Figure 1. Great Lakes Restoration Initiative projects funded during 2010 - 2013. Source: Great Lakes Restoration Initiative

Toxic Substances

The presence of toxic contaminants in the Great Lakes region creates a significant health risk to both humans and ecosystems. Over 2,000 miles of Great Lakes shoreline, 20% of the total, have some kind of restriction on use imposed due to sediment contamination (EPA, 2015b). The most heavily polluted areas are identified as Areas of Concern, which are defined as locations in the Great Lakes region where extensive land and water degradation has occurred that significantly impairs safe use by humans and the ability of native aquatic life to thrive (EPA, 2015d). The presence of heavy metals, pesticides, PCBs (polychlorinated biphenyl), pharmaceuticals, and other chemicals in each of the five lakes are cause for concern. Through biomagnification, toxic substances present in the lowest levels of the food web (e.g., the plankton) increase in concentration through successively higher trophic levels, heightening health risks to top consumers like humans and other types of wildlife (EPA, 2015g). Cleanup techniques vary by site, depending on the nature and extent of pollution and other impairments to human and wildlife wellbeing. Common remediation measures include the removal of contaminated sediment through dredging, or the capping of contaminated sediments using a clean layer of sediment as a barrier to contain toxic substances (Great Lakes Dredging Team, 2013).



Figure 2. Coal-fired power plants are a major contributor to mercury contamination throughout the Great Lakes basin. Source: GreenFaith.

Nutrient Pollution and Algal Blooms

Nutrient inputs into aquatic systems, often resulting from human activity, create additional health concerns. Elevated nutrient levels feed algae, resulting in algal blooms that can have multiple harmful effects (Koslow, 2013). When algae die, bacteria that decompose them consume dissolved oxygen in the water, thereby reducing oxygen availability for fish and other organisms. These hypoxic conditions create “dead zones,” which are uninhabitable for a variety of aquatic species (EPA, 2013). Some of these algal blooms include types of cyanobacteria that produce toxins, which can kill fish, mammals, and birds (WHO, 2015). Public water systems can also be affected. These toxins can cause liver damage in humans, which is a major health concern for the 26 million people depending upon the Great Lakes for drinking water (WHO, 2015). Additionally, algal blooms can deter tourism, discourage aquatic recreation, and lower property values (International Joint Commission, 2014). In 2011 algal blooms in Lake Erie cost the recreational and commercial fishing industries an estimated \$2.4 million (International Joint Commission, 2014).

The largest source of nutrient pollution impacting the Great Lakes is nitrogen and phosphorus-rich runoff generated by the extensive use of fertilizers and production of manure on agricultural land (International Joint Commission, 2014). Treated and untreated wastewater from urban centers also contributes significantly to the pollution of the Great Lakes, with major U.S. cities including Detroit, Cleveland, and Buffalo discharging wastewater, stormwater, and sewage into the Great Lakes (EPA, 2015f). As of 2011, the Great Lakes region received an estimated 47 million pounds of phosphorus runoff annually into watershed outlets from urban and agricultural sources, 22 million of

which came from cultivated cropland (NRCS, 2011). The Restoration Initiative includes plans to reduce nutrient runoff in urban areas by establishing various kinds of watershed management projects, including natural storm water retention and treatment locations that rely on vegetation to take up and filter excess water and suspended pollutants (Southeast Michigan Council of Governments, 2013). The Restoration Initiative also includes plans to implement nutrient reduction practices in targeted agricultural watersheds. Initiative-funded public outreach and incentive programs that promote conservation agriculture can reduce nutrient runoff and increase agricultural yields, resulting in more profitable productive land in the long-term. Specific conservation strategies include buffer strips, cover crops, no-till planting, and two-stage ditches (Great Lakes Interagency Task Force, 2014b).

Damage to Native Species and Habitats

The Great Lakes region is home to hundreds of species of plants and animals whose populations have been reduced to the point where they are at significant risk of extinction (Great Lakes Interagency Task Force, 2014a). Many of the 200 globally rare plants and over 40 wildlife species found exclusively in the Great Lakes region are of significant

Wild Rice Restoration

Northern wild rice (*Zizania palustris*) is a grass native to the Great Lakes region that has been a traditional food source for members of the Chippewa tribe for centuries. In 1900, wild rice yields reached up to 5000 bushels (Jenks, 1900). However, in recent years changing water levels and invasive species have reduced rice harvests to mere fractions of what they once were.

The Fond du Lac Band of the Chippewa tribe is one of several bands that are working to restore native habitats to increase rice harvests. From 2010 to 2015, 18 projects with over \$6 million in funding were undertaken to expand rice harvests so that Chippewa traditions can continue (Great Lakes Restoration Initiative 2015a). Harvesting, drying, cleaning, and eating wild rice are community activities that help teach a new generation of Chippewa members about their rich history in this land. The Fond du Lac Band consider the rice as sacred because it is the reason the band settled in this region centuries ago (Fond du Lac Band, 2015).

The Resource Management Division of the Fond du Lac Band work with state agencies, such as the Minnesota Pollution Control Agency and the Wisconsin Department of Natural Resources, to remove dams and invasive plants. State agencies then report their progress and challenges to the Great Lakes National Program Office within the EPA (Minnesota Pollution Control Agency, 2015).

The Great Lakes region brings many benefits to the people who live there. Native wild rice is a cultural asset that has been lost over many years of environmental degradation. Restoring its native ecosystem is the first step to regaining this valuable asset.



Figure 3 Chippewa members harvesting rice using traditional methods. The man in front propels the wooden boat forward using a long spruce pole, while the man in back knocks the rice down using a cedar ricing stick. Source: Cheryl Katz.

ecological, economic, recreational and cultural importance to the area and its people (Great Lakes Interagency Task Force, 2010). Agriculture, urban development, and residential shoreline development all contribute to habitat degradation. Pollutants, overfishing, and harm from invasive species places additional stress on aquatic species (Great Lakes Interagency Task Force, 2010; Great Lakes Interagency Task Force, 2014a).

The Restoration Initiative promotes protection, restoration, and enhancement of habitat to help sustain healthy populations of native species. During Phase I, over 3,400 miles of rivers were reopened to enable fish passage, 500 fish barriers were removed, and 100,000 acres of wetlands and 48,000 acres of other habitat were restored in the Great Lakes Basin (Great Lakes Restoration Initiative, 2015d). Phase II of the Restoration Initiative aims to reopen an additional 14,000 miles of tributaries, restore and enhance 875 miles of shoreline, 164,000 acres of coastal wetland, and 835,000 acres of other habitats by 2019 (Great Lakes Restoration Initiative, 2014a).

Threat of Invasive Species

Over 180 invasive and non-native aquatic species have entered the Great Lakes region through a variety of means, including recreational boating, harmful fishing practices, shipping operations, and illicit wildlife trade (Great Lakes Interagency Task Force, 2014a). Invasive species can prey on native species or adversely affect their survival by competing for space, light and nutrients. Invasive species can also have indirect effects by altering food webs and environmental conditions. The economic impact of invasive species is extensive, affecting commercial and sport fishing, recreational activity, and municipal facilities. The introduction of invasive aquatic species into the Great Lakes are estimated to cause \$106 million losses in sport fishing, \$5.3 million in losses in commercial fishing and \$27 million in operating costs due to invasive mussels clogging critical water infrastructure (Rothlisberger et al., 2012). These costs add up to approximately \$138 million a year in economic damages (Rothlisberger et al., 2012).

The Restoration Initiative has three main objectives regarding invasive species within the Great Lakes region: (1) prevent new introductions of invasive species, (2) control established invasive species, and (3) develop control technologies and improving management techniques. Control and prevention measures include the installation of physical barriers, application of herbicides or pesticides, and biological controls (Great Lakes Interagency Task Force, 2014a). In Phase II, targeted invasive species will continue to be monitored and controlled. Aquatic Nuisance Species Management Plans developed by state agencies and tribal communities will also be supported by federal agencies and Restoration Initiative funds (Great Lakes Interagency Task Force, 2014a).

Elements of the Act

The Act outlines modifications to the Clean Water Act, specifically to the Great Lakes Water Quality Agreement of 1978 and its amendment, the Water Quality Agreement of 1987, whereby the U.S. and Canada formally acknowledge the need to protect the Great Lakes region from further degradation. The Act's specific provisions are to:

1. Reauthorize the Great Lakes Restoration Initiative for five years and allocate \$475 million in annual funding;
2. Permanently establish the Great Lakes Advisory Board (hereafter, "the Advisory Board") to provide advice and recommendations on matters pertaining to restoration and protection;
3. Permanently establish the Great Lakes Interagency Task Force (hereafter, "the Task Force") to increase coordination among federal agencies and non-federal stakeholders; and
4. Implement a requirement for annual comprehensive restoration and crosscut budget reports (GovTrack, 2015c).

1. The Restoration Initiative

The Great Lakes Restoration Initiative was launched by the Obama Administration in 2010 to provide a framework for achieving long-term goals of protecting and restoring the world's largest surface freshwater system (Great Lakes Interagency Task Force, 2014a). The Restoration Initiative's focus areas include (1) cleaning up Areas of Concern; (2) preventing and controlling invasive species; (3) improving nearshore health by reducing nutrient runoff of nonpoint source pollution contributing to harmful algal blooms; (4) restoring habitat to protect native species; (5) and implementing foundations for future restoration actions, including climate resiliency, education, and the use of a science-based adaptive management approach (Great Lakes Interagency Task Force, 2014a). An Action Plan outlines objectives, commitments, and measures of progress for each of these focus areas. The Restoration Initiative was created through executive action, meaning no law passed by Congress has specifically authorized the Restoration Initiative. However, Congress has appropriated funds annually to implement the program (Sheikh, 2013). The Act would permanently establish the Restoration Initiative, led by the Environmental Protection Agency (EPA), to evaluate, identify, implement, and fund project proposals that address key environmental problems facing the Great Lakes through 2020 with a \$475 million annual budget.

2. Advisory Board

The Act would permanently establish the Advisory Board to provide advice and recommendations on matters pertaining to Great Lakes restoration and protection. The Advisory Board was originally established in 2012 under a two-year charter in accordance with the provisions of the Federal Advisory Committee Act. The Act would permanently reauthorize the Advisory Board's mandate and allow between 14 and 20 members, who will be appointed by the EPA Administrator. Represented stakeholders include state, local and tribal governments, environmental and conservation organizations, hunting and agricultural interests, academia, the business sector, and others. The Act states that the Advisory Board will convene at least once every six months in an open-to-the-public setting. However, the Advisory Board has been meeting more frequently than the requirement over the past two years, convening six times in 2013 and seven times in 2014 (Great Lakes Advisory Board, 2015a). While the recommended program design developed within this report alters administrative details of the Advisory Board (see Program Design), the mission remains essentially unchanged.

3. Interagency Task Force

An Executive Order by the Bush administration created the Interagency Task Force in 2004 in an effort to provide unified direction to federal Great Lakes policy (U.S. Government Publishing Office, 2004). The Act of 2015 would permanently establish this Task Force under law. The Task Force is a cross-governmental body comprised of representatives from 11 federal departments and agencies as well as five sub-agencies. Chaired by the EPA, the Task Force is a regional collaboration of Great Lakes restoration stakeholders (Sheikh, 2013). The Task Force's mission is to promote collaboration and coordination within the Restoration Initiative. More specifically, it is assigned to: (1) collaborate with Canada; (2) coordinate the development of federal policy strategies and projects; (3) set priorities for addressing Great Lakes restoration and protection; (4) assist with Great Lakes system management; (5) develop outcome-based goals for the Great Lakes system while relying on science-based indicators; and (6) review, update, and revise the Restoration Initiative Action Plan every five years (GovTrack, 2015c).

4. Accountability

The Act also proposes new mechanisms for reporting to Congress - an annual comprehensive restoration report from the EPA, and a crosscut budget report of all federal funds allocated to the restoration efforts by every agency. The Act sets requirements that enhance the accountability of entities involved in the Restoration

Initiative. Under the Act, the EPA is required to submit a comprehensive annual restoration report on the overall health of the Great Lakes to Congress, highlighting the achievements of the past fiscal year, the amounts spent on water quality initiatives, description of monitoring systems, and anticipated successes and costs for the upcoming fiscal year. Additionally, the governors of bordering states and the Task Force are required to submit a publicly available financial report describing budget proposals, identifying adjustments, and listing projects to be undertaken in the next year (S. 504, 2015).

Political Obstacles

While no party has voiced direct opposition to the Act, there are members of Congress who may obstruct the passage of the bill. Senator Mitch McConnell is the Majority leader and holds much political power in what bills get passed in the Senate. Representative Paul Ryan is the newly elected Speaker of the House of Representatives, and will be heavily involved in the process of passing bills in the House. The Act would need to be supported by both Senator McConnell and Speaker Ryan in order to pass both houses of Congress. However, the congressmen may oppose the bill because of ideological positions against government spending and government authority.

A more immediate challenge to the passage of this bill is its status in the Senate Committee on Environment and Public Works. The bill has been dormant in this committee since it was introduced in February 2015. The chairman of the committee, Senator James Inhofe, decides which bills pass through this committee for voting in the Senate. Considered a tough opponent of environmental policy, Senator Inhofe made headlines by bringing a snowball to the Senate floor in February 2015 in an attempt to discredit climate change (Bump, 2015). According to the staff of Senator Baldwin, the author of the bill, the most probable reasons for the Act's slow progress is the Committee's

Political Issues Affecting the Passage of the Act

Republican John Boehner served as Speaker of the U.S. House of Representatives from January 2011 to October 2015 (Steinhauer, 2015). During his tenure as Speaker, it was his responsibility to guide bills through passage in the House. Part of the Act's slow progress in 2015 can be attributed to Speaker Boehner's lack of support for this or any spending bill, despite representing Ohio, a Great Lakes state. Because he led the Republican Party during a time when it was infused with Tea Party anti-government sentiment, Speaker Boehner was known for criticizing the amount of spending by the federal government and called for more fiscal responsibility (Press Office Speaker Ryan, 2009). Speaker Boehner announced his resignation on September 25, 2015 (Steinhauer, 2015).

Republican Paul Ryan, of Wisconsin, became Speaker on October 29 2015. The fate of the Act, should it be introduced to the House, would now fall to him. Interestingly, this shift in Congressional leadership may spell new hope for the Restoration Initiative. Before he was Speaker, Paul Ryan had shown support for the Restoration Initiative. On his website, Speaker Ryan states that "It is absolutely essential that we make every effort to protect this treasured resource" (Ryan, 2015). The Speaker says he supported the approval of \$300 million to the Restoration Initiative in the Consolidated and Further Appropriations Act of 2015 (Ryan, 2015). This suggests that, while the Speaker clearly supports the efforts of the Restoration Initiative, he is more likely to support Representative David Joyce's (R-OH) alternate bill called the Great Lakes Restoration Initiative Act. Almost identical to the Great Lakes Ecological and Economic Protection Act, the alternate bill allocates \$300 million in funding, the same amount Speaker Ryan supported for 2015, as opposed to the \$475 million funded by this Act (GovTrack H.R. 223; GovTrack S. 504). The alternative bill was introduced to the House in January of 2015. The new leadership of Speaker Paul Ryan will influence the progress of both bills when the House reconvenes in 2016.

opposition to both federal spending and EPA authority. Senator Inhofe criticized the Restoration Initiative while it was still being planned in 2006, opposing the proposed amount of funding for Great Lakes restoration, and describing it as wasteful spending (James Inhofe U.S. Senator for Oklahoma, 2006). Although his office has not made an official statement on the current bill, Senator Inhofe also voted against a similar bill providing federal funding for Great Lakes protection and conservation (OnTheIssues, 2015a).

Senator Inhofe is also a harsh critic of the EPA, stating that “many current environmental regulations are not grounded in science” (James Inhofe U.S. Senator for Oklahoma, 2015). In June 2015, his committee passed legislation to scale back EPA programs under the belief that the agency should have less authority. According to Senator Baldwin’s staff, a change in Congressional leadership may be necessary for the passage of this bill.

Particularly in a fiscally conservative political environment, government programs must demonstrate tangible benefits resulting from the government funding they receive. However, these data cannot be effectively compiled at the grassroots level – where much of the improvement of Great Lakes ecosystems is done. To ensure ecological restoration projects are carried out, receive the necessary funding, and are reported, the Act establishes an overarching administrative framework. This framework provides the foundation of a program design outlined below.

Program Design

Interagency Task Force

The primary responsibilities of the Task Force are to set Restoration Initiative priorities and facilitate the implementation of restoration work in the Great Lakes region. The Act itself does not define clear criteria on how to distribute Restoration Initiative funds. Thus the Task force has considerable autonomy in the allocation of funding. This is the most direct method by which the Task Force sets Initiative priorities and guides implementation of the Initiative. This also means that the practical outcome of how funds are allocated year to year can vary considerably based on the Task Force’s decisions.

During Phase I of the Restoration Initiative, the EPA selected and funded projects based on recommendations from the Task Force and the Advisory Board, as well as on principles and criteria set in guidance documents such as the Great Lakes Regional Collaboration Strategy of 2005 and Action Plans I and II of the Restoration Initiative. The scope of the problem, the expense, and the likelihood of rapid progress are some of the factors used to guide project selection. The recommended program design established here advocates project allocation based upon three criteria: focus area, geographic location, and sponsoring agency.

Focus Area Allocation

Although the legislation sets no criteria for distributing funds among the range of environmental problem areas, Phase I of the Restoration Initiative allocated the greatest funding to the cleanup of toxic substances in Areas of Concern (around \$100 to \$150 million per year), followed by habitat restoration with around \$60 million. The administrative focus area, which addresses accountability, monitoring, reporting, education, and outreach, received significantly fewer resources during all periods (Great Lakes Restoration Initiative, 2015d).

In 2012, the Task Force created subgroups to develop guidelines for the distribution of funds within and amongst each focus area (GAO, 2015). Through this process, the Task Force mandated that an annual minimum of 180 million dollars, or almost 55% of the average annual budget of Phase I, be spent on three focus areas – the cleanup of toxics, control of invasive species, and reduction of nutrient runoff. Though the Task Force established

minimum funding for these three focus areas, the final distribution of funds from FY2012 to FY2014 shows that toxic cleanup received the substantial majority of this funding (Great Lakes Restoration Initiative 2015d). Such trends are illustrated in Figure 4.

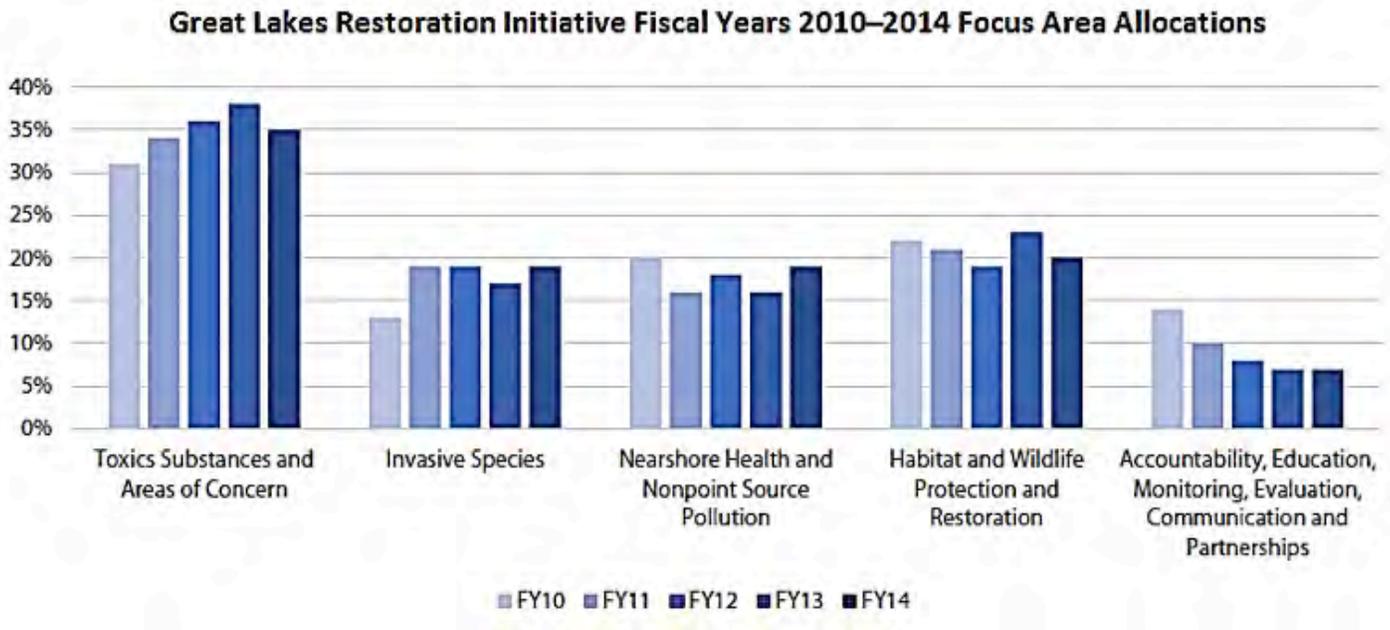


Figure 4. Focus Area allocations from 2010 - 2014. Source: Great Lakes Restoration Initiative, 2015d.

We propose a three-tiered funding allocation system with the highest priority granted to Tier 1 and the lowest to Tier 3 in order to ensure the most effective use of funds.

In Tier 1 the total budget is divided amongst the five environmental focus areas. All five must receive at least 10% of the annual budget, and no area can receive more than 40%. This new percentage-based standard ensures that all focus areas are substantively addressed, yet provides flexibility for adaptive management.

Tier 2 specifies that all five Great Lakes and all eight bordering States must receive at least some funding, with annual flexibility in the determination of exact amounts. Some lakes and watersheds face greater challenges than others, which will no doubt affect geographic distribution of funding. Targeted efforts during Phase I in the Saginaw Bay, Western Lake Erie/Lake St. Clair and Green Bay watersheds focused on nutrient runoff reduction in response to the impact of agricultural and urban concentration in those areas. Concentrated efforts like these should be continued, but should not outweigh the need to contribute to the entire region's restoration efforts.

Tier 3 prioritizes funding based upon the magnitude of impact either in terms of timely completion or remediation of multiple ecological stressors across Focus Areas. Projects which are closest to the desired reduction of the ecological problem(s) will be given preference for funding. Also, projects which address multiple ecological damages or that develop data and other resources that can be used for other projects will be prioritized.

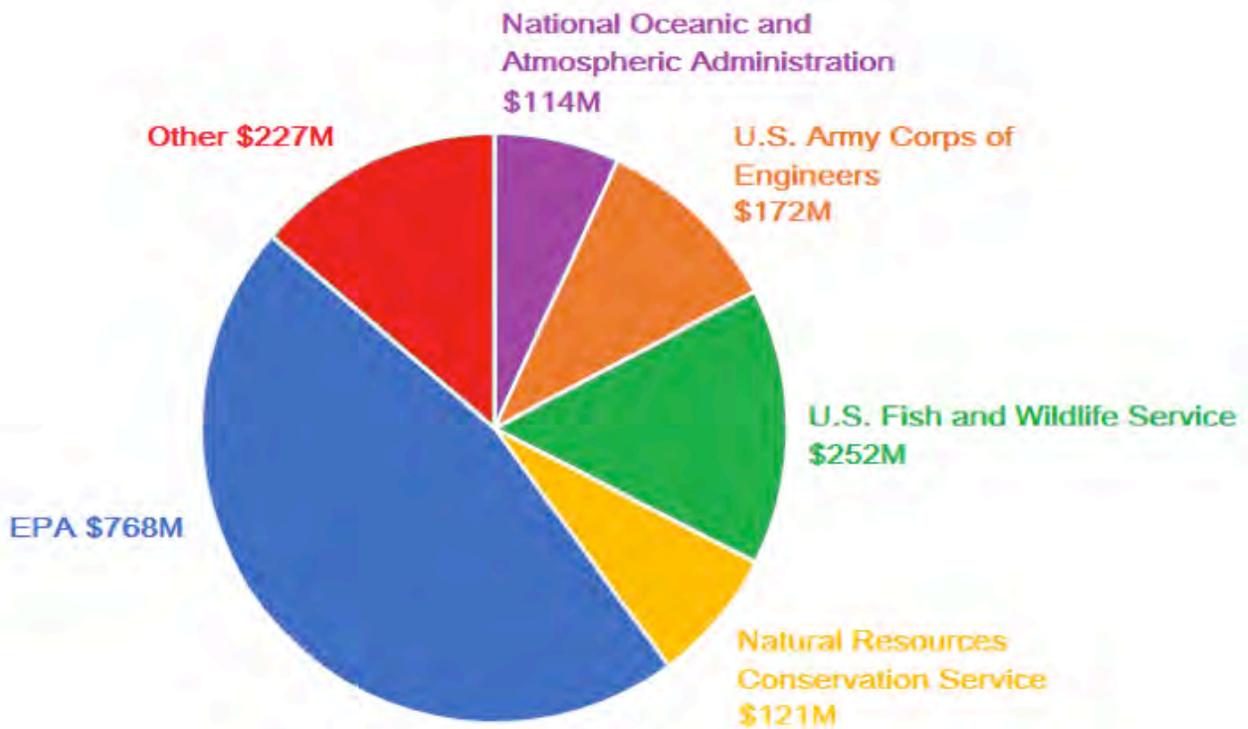


Figure 5: Distribution of Phase I restoration funding among federal agencies.

While not included as parameters for funding allocation, agency-specific funding should be noted as a significant factor in the distribution of Initiative funding. During Phase I, five Task Force Agencies received about 86% of total funding to oversee over 1,600 projects. The EPA received by far the largest amount of funds, followed by the Fish and Wildlife Services, U.S. Army Corps of Engineers, Natural Resources Conservation Services and NOAA (GAO, 2015; Figure 5). These top funded agencies also carried out nearly 80% of the restoration projects in that period (Great Lakes Interagency Task Force, 2014a). These agencies received most of the funding due to expertise in ecological restoration, and familiarity with similar or existing projects.

Guidelines for funding allocation are ineffective without a means of measuring whether program implementation adheres to the guidelines established by the program design. A performance management system has been established to ensure that funding is allocated according to the parameters established above. While the Phase II Action Plan establishes scientific performance metrics based upon the Restoration Initiative's restoration goals, under the Government Performance and Results Act of 1993, the Task Force is also obligated by law to develop a performance management system to measure the overall function of the top level federal administration working to implement the Restoration Initiative. The chart below details the performance management system established to ensure accountability and transparency in project selection by the Task Force.

Project Selection	Number of applications	The number of applications received indicates the effectiveness of agency promotion and outreach efforts.
	Number of projects approved	Number of projects approved, and in a timely manner indicates whether the GLNPO is effectively processing applications.
	Geographic spread by state	Geographic spread indicates whether the GLNPO is complying with criteria for project selection established by the program design
	Scale of severity	Projects are prioritized according to severity under the Initiative program design
	Five focus areas ranges from 10%-40% funding of total budget	Ensures compliance with funding criteria established in program design
	Number of successfully completed projects	A high ratio of completed projects over total pursued indicates support from the National Office resulting in the successful completion of projects according to the scientific metrics outlined in the Action Plan.
	Number of delayed projects, length of delay, and reason for delay	Low delay rates indicate strong support from the National Office.
	Complete phase-in of EAGL and quarterly updates, including guidance on entries and data control	GAO reports cited a lack of guidance on data entry and the low quality of the data entered which negatively affected the EPA's ability to assess and report progress as required in the Action Plan. An accurate, robust reporting system is necessary for measuring results and progress towards program goals.

Figure 6: Funding allocation criteria and performance indicators are used to measure the effective operation of the Task Force in project selection.

The Great Lakes National Program Office

As outlined above, the EPA-led Task Force provides strategic direction for policies on restoration, develops goals, and sets priorities while taking into consideration stakeholder input received through the Advisory Board. The Great Lakes National Program Office (hereafter, “the National Program Office”) is a unit within the EPA that serves as the central administrative body that collaborates with the Task Force and oversees the implementation of the Restoration Initiative. The National Program Office operates out of the EPA’s Region 5 Office, which serves six of the Great Lakes states and 35 Indian tribes (EPA, 2015c). It was permanently established in 1978 with the passage of the Great Lakes Water Quality Agreement to coordinate efforts by the U.S. and Canada to restore the ecological health of the Great Lakes Basin through grants, agreements, and contracts (EPA, 2015a). Working under the strategic framework of the Restoration Initiative, the office also coordinates a wide variety of partners to achieve environmental progress.

During the past five fiscal years, the National Program Office has incurred costs ranging between \$12 and \$14 million to implement the Restoration Initiative (Great Lakes Restoration Initiative, 2015d). These funds have been spent to pay employee salaries and benefits, reimburse travel and general expenses, and provide working capital (Great Lakes Restoration Initiative, 2015d). The National Program Office’s costs comprise a small portion of each year’s appropriations – around 5% of total Restoration Initiative funding -- and the vast majority of allocations go to fund projects on the ground, such as dredging or preventing invasive species (Great Lakes Restoration Initiative, 2015d; Figure 7).



Figure 7: Total allocation of funds to the Restoration Initiative during the first five years of implementation. A portion of this funding, shown in red, pays for the operations of the National Program Office.

The National Program Office has a staff of between 60 and 70 employees who worked to implement Phase I of the Restoration Initiative by coordinating the many agencies and stakeholders carrying out restoration work on the ground, collecting and reporting on project and funding data, and assisting communities with environmental remediation plans (EPA, 2015a). Because this structure has functioned well in support of the Restoration Initiative

through Phase I, the basic structure of the Office will remain unchanged in the program design presented here. However, to effectively oversee the increased workload presented in Phase II, the proposed program design expands the existing staff within the National Program Office through the addition of the following twelve positions:

- *Officer of Application Review*: An officer that oversees the project application review in all priority areas;
- *Officer of Budget Allocation*: An officer that oversees expenditures, reporting and budget allocation in all priority areas;
- *Financial Management Team*: Two accountants and two auditors that report to the Officer of Budget Allocation to support the budget process, review expenditures, and assist in the production of annual budget reports and the crosscut budget;
- *Officer of Cross-cut Budget Reporting*: A one-year renewable term position with the OMB, to conduct a retroactive analysis of past federal spending on environmental efforts in the Great Lakes region; and
- *Administrative Support*: A team of five administrative assistants, two with IT expertise, to support the activities of the Task Force, Advisory Board, and National Program Office.

These positions will be integrated into the already established organizational structure of the Restoration Initiative, and are specifically designed to address shortfalls in administrative operations during Phase I. Figure 8 shows these additional positions within the organizational structure of the National Program Office positions for Phase II of the Restoration Initiative.

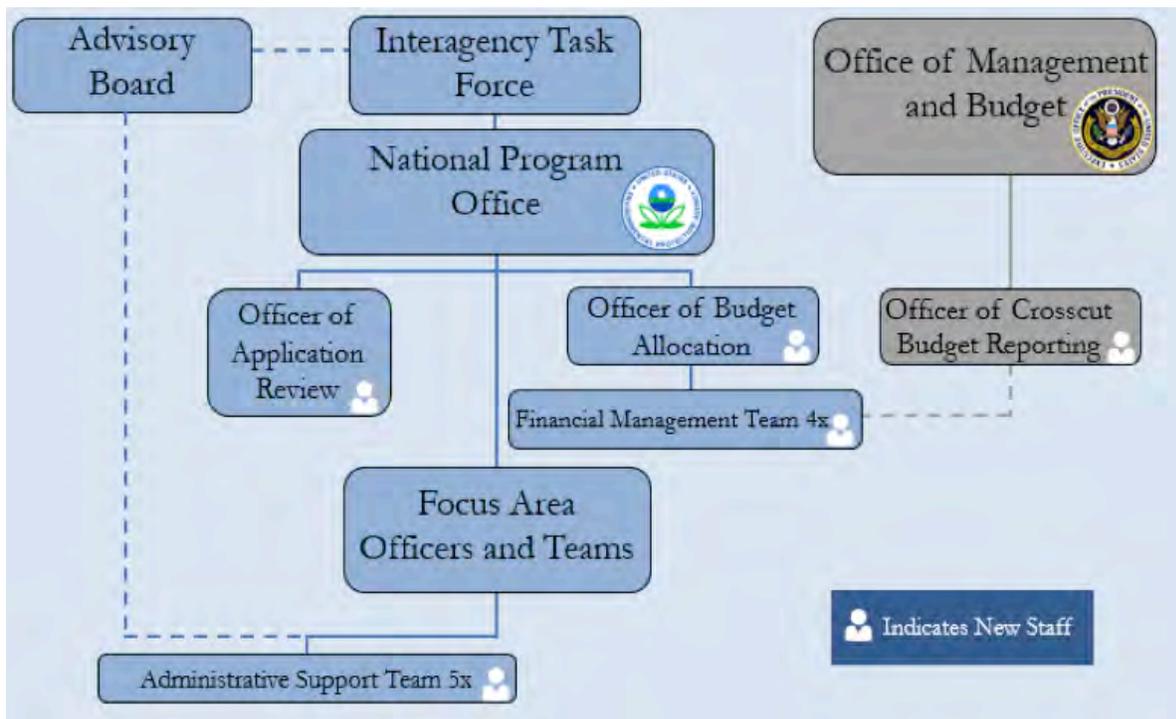


Figure 8: This staffing plan includes all additional positions created by the revised program design within the organizational structure of the National Program Office (in blue).

The schedule of salaries for this additional National Program Office staff was determined using the Federal government General Schedule. The General Schedule is region-specific and provides a pay scale with 15 grades (USOPM, 2015). Grades for different jobs are assigned based on difficulty of the job, responsibilities included,

and educational qualifications (USOPM, 2015). National Program Office positions should be staffed at GS-5 and above, requiring a Bachelor's degree or higher for all candidates. Table 1 shows the grade required for each position and its corresponding salary, assuming new hires with limited federal experience with a work location based in Chicago.

Table 1. General Schedule salary levels for additional National Program Office employees.

Position	GS Level	Salary
Officer of Application Review	GS 13	\$91,467
Officer of Budget Allocation	GS 13	\$91,467
Auditors (x2)	GS 8	\$48,022
Accountants (x2)	GS 8	\$48,022
Officer of Cross-cut Budget (OMB 1-year term)	GS 9	\$53,041
Administrative Assistants (IT x2)	GS 7	\$43,362
Administrative Assistants (General, x3)	GS 5	\$35,005

The cost for fulltime federal employee benefits is, on average, 39% of the employee's salary (CBO, 2012). Since the term position at the Office of Management and Budget is not eligible for all the benefits under the National Program Office, this budget estimates that the individual's benefits will cost roughly 30% of the employee's salary. These estimates have been added to the 2016 budget additions under this program design. Thus the budget for additional National Program Office employees, inclusive of salaries and benefits, totals \$856,751 for Fiscal Year 2016 (Table 2).

Table 2. Estimated total budget for new National Program Office employees for FY2016.

Full-time Employee Salaries	\$ 619,802
<i>2 positions, GS-13</i>	<i>\$ 182,934</i>
<i>1 term position, GS-9</i>	<i>\$ 53,041</i>
<i>4 positions, GS-8</i>	<i>\$ 192,088</i>
<i>2 positions, GS-7</i>	<i>\$ 86,724</i>
<i>3 positions, GS-5</i>	<i>\$ 105,015</i>
Full-time Permanent Employee Benefits	\$ 221,037
Full-time Term Employee Benefits	\$ 15,912
TOTAL:	\$ 856,751

Advisory Board

As discussed previously, the Advisory Board is a federal advisory committee comprised of stakeholders that include state, local, and tribal governments, environmental and conservation organizations, hunting and agricultural parties, academia, and the business sector (Great Lakes Interagency Task Force, 2014a). Currently the Advisory Board has 16 members. The objective is that this board represent all of the diverse stakeholders in the Great Lakes region that are affected by the conditions of the region's ecosystem.

To increase representation of urban minority and tribal communities, we recommend that membership be increased to the maximum legal number of 20 members. Two additional representatives should be appointed by the Great Lakes governors and two more by Great Lakes mayors. Due to the extensive impact the degradation of Great Lakes ecosystems has on First Nation communities, we recommend that the minimum membership requirement of tribal governments on the board increase to two members rather than one. At minimum, one board member should represent urban minorities.

To increase the diversity of stakeholder opinions and to prevent stagnation and path dependency within the Advisory Board's organizational culture, we recommend that the board establish a rotational membership system. Appointees would serve three-year terms with staggered start dates so that one-third of the membership is replaced every year.

Belle Isle South Fishing Pier Restoration

Belle Isle State Park lies in the Detroit River near the border between the United States and Canada. It is an urban park boasting a range of attractions including an aquarium. Well over two million Detroit residents and tourists visit the park annually to take in the city skyline, fountains, bike paths and other recreational and educational opportunities (Michigan DNR, 2015). The park supports a veterans work program as well as a variety of youth engagement and training programs that promote nature-based learning (Michigan DNR, 2015).

Once prevalent among this suite of recreational activities was fishing. However, decades of pollution from the nearby city of Detroit have resulted in loss of fish and wildlife populations and habitat (Healing Our Waters Coalition, 2015a). Over \$500,000 of Restoration Initiative funding, with matching grants from other organizations, has been used to implement restoration projects to rebuild the Isle's South Fishing Pier and attract fish to this once plentiful fishing location (Healing Our Waters Coalition, 2015a).

The projects have focused on rebuilding the pier and its surroundings to slow the flow of water and protect nearby wetlands that serve as fish nursery habitat. Several species of native fish that were once rare, including walleye, smallmouth bass, channel catfish, and white bass, have now been caught off the pier (Healing Our Waters Coalition, 2015a). Improved habitat and public awareness of the recreational benefits of healthy aquatic ecosystems will help fish populations thrive along the Detroit River and other waterways.



Figure 9. Through the Stepping Stones Program, local youth have the opportunity to learn outdoor skills. Source: Michigan DNR, 2015

The Advisory Board provides the Task Force and the EPA with independent, non-binding advice on restoration and protection policy, long-term objectives, and annual priorities. During Phase I, the Task Force generally implemented Advisory Board recommendations. However to ensure transparency, the program design here requires public disclosure of formal written reports of Advisory Board recommendations. Task Force responses to Advisory Board recommendations must also be made public. Comment periods are in place for Advisory Board recommendations and Task Force decisions to promote accountability and public participation in the formation of Restoration Initiative priorities from Advisory Board recommendations.

Given the importance of Advisory Board input, and the Board’s already active role in formation of restoration policy, we recommend that the Board increase the mandated number of meetings from two per year to four. This includes two in-person meetings and two virtual meetings. Location of in-person meetings will rotate among the eight Great Lake states. All Advisory Board meetings will be open to the public and broadcast online.

Members of the Board are currently self-funding travel to Advisory Board meetings (Great Lakes Advisory Board, 2015b). In order to ensure that financial considerations do not prevent any stakeholder from participating in the Advisory Board, particularly those representing low-income and minority communities, members will be reimbursed for travel for two in-person meetings per year in Phase II. A provision for travel reimbursement is included in the Act, highlighting the importance of inclusion in the Advisory Board’s mandate.

Advisory Board performance can be evaluated by their level of participation in defining Restoration Initiative priorities and policy as well as the degree of public access to Advisory Board deliberations. The proposed program design operationalizes Advisory Board participation by recording meeting activity and timely publication of recommendations. Similarly, public involvement is measured by community member participation in Advisory Board meetings (which are all open to the public) in person and online. These measures of success are outlined in Figure 10 below.



Figure 10: Performance management indicators for the Advisory Board.

Budgeting and Reporting

The Act seeks to improve transparency and fiscal stewardship. The effort to enhance accountability through reporting and crosscut budgets stems mainly from the conclusion of the Government Accountability Office (GAO) in a 2015 report that, after several years of efforts, progress in restoring the Great Lakes was slow and restoration initiatives too loosely organized (USGAO, 2015).

The Act specifies that Congress should receive an annual comprehensive report from the EPA on restoration efforts and all funds allocated to every agency. The goal is to have a clear picture of all projects in the Great Lakes region that received funding, including under other initiatives such as Superfund (USGAO, 2015). The information provided in the report also enables tracking of accomplishments. To compile the crosscut budget the EPA would work together with the U.S. Office of Management Budget (OMB): the EPA is responsible for providing information on the Restoration Initiative, and the OMB for providing information on funding from other programs operating in the Great Lakes region.

The Government Accountability Office reported in early 2015 that the OMB has not been presenting all information needed to complete the crosscut budget report (USGAO, 2015). This involves a backlog of federal budget data of all funds spent in the Great Lakes region beginning in 2004 – including Restoration Initiative and non-Initiative funding. The OMB, however, claims that it does not have the financial or staff resources to carry out the retrospective reporting required by the Act (USGAO, 2015).

Comprehensive budget reporting is costly. It requires substantial human and material resources to prepare an accurate crosscut report of funds spent across programs and between agencies. The program design recommended here allocates Phase II funding to hire a financial officer on a renewable term contract. With additional staff, necessary historical data for future reports can be secured. The Officer of Crosscut Budget Reporting is one of the 12 new staff positions proposed to augment the current staffing plan detailed above. This Officer will be supported by the additional four staff in the Financial Management Team hired within the National Program Office.

Benefits to Regional Economies

Restoration of the Great Lakes region produces an array of benefits, including substantial economic growth and increased financial stability. The Great Lakes region annually supports \$62 billion in worker wages and over 1.5 million jobs (EPA, 2011). Researchers have estimated that for every \$1 invested in Great Lakes restoration, there is an expected return on investment of \$2 to \$3 (Austin et al, 2007). Restoration efforts are expected to yield a minimum of \$50 billion in direct economic benefits over the long run, including up to an \$11.8 billion increase in benefits from heightened fishing, recreation and tourism; up to \$19 billion in higher property values by remediation of contaminated coastal sites; and up to \$125 million in reduced costs for local municipalities (Austin et al, 2007). When these billions of dollars in anticipated economic benefits are compared with the \$475 million proposed budget for the continuation of the Restoration Initiative, it is clear that short-term restoration investments could provide substantial positive returns for both people and wildlife living in the Great Lakes (EPA, 2011).

These benefits are already being realized in local communities. For example, a \$22 million investment in the decontamination of Milwaukee's Kinnickinnic River immediately created over 100 new local jobs that in total provide over \$1 million in pay. In the long term, this investment has increased revenue produced along the river by over 30%, and has added substantial new boating infrastructure to attract more tourism revenue (EPA, 2011). Additionally, current habitat restoration efforts on the eastern shoreline of Lake Michigan are expected to yield a 6-to-1 return on investment over 10 years, with \$10 million in federal cleanup funding expected to result in over \$65 million in economic benefits through tax revenues, and increased tourism and recreational spending (NOAA, 2011).

The program design budget, with 12 additional staff for the National Program Office and the inclusion of Advisory Board travel expenses, increases annual administrative expenditure by \$879,141. When combined with the National Program Office expenses, costs for administration of the Restoration Initiative represents only 2.8% of proposed fiscal year 2016 Initiative allocations (Great Lakes Restoration Initiative, 2015d). Because annual funding for FY2016 will be increased to \$475 million under the Act, the proportion of the budget spent on administration will actually decrease compared to FY2014 during which 5.4% of the allocated budget was spent on administration (Great Lakes Restoration Initiative 2015d). Thus, the proportion of the total Restoration Initiative funding that will be spent on overarching administrative costs will remain quite small, but represents an important step towards promoting effective and comprehensive implementation of the growing reach and impact of the Restoration Initiative.

Data Management and Reporting

Before 2015, the information needed to prepare the annual comprehensive restoration report to Congress was collected through the Great Lakes Accountability System (GLAS), a decentralized reporting network in which project grantees were responsible for entering project data directly into the system. However, the data produced in this manner were frequently incomplete or unreliable and the system was prone to reporting errors (USGAO, 2015). Beginning in 2015, a centralized system called the Environmental Accomplishments in the Great Lakes (EAGL) was implemented. The new system requires that the only member agencies in the Task Force compile and enter data into the system, improving quality and reliability (USGAO, 2015). EAGL is expected to enhance the availability of detailed information on annual program accomplishments and enable comparisons of funding levels allocated for participating Federal agencies. The end result should be more precise data allowing more targeted restoration efforts and planning.

Economic as well as ecological measures of impact will be recorded through the EAGL system. To address criticisms that funds spent on the Initiative do not produce sufficient economic results, program wide indicators on job growth and creation as a result of Initiative funding will be included in the program's reporting framework. Results of all of these activities will be evaluated on the below criteria.

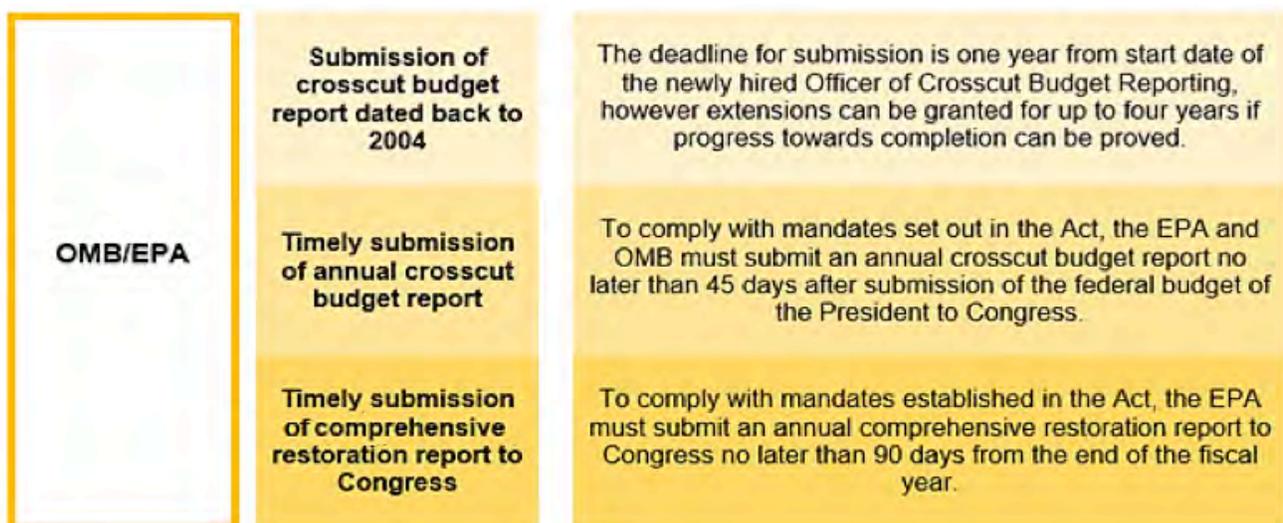


Figure 11: Performance management indicators for budgeting and reporting processes.

Implementation Calendar

The recommended alterations to the program design of the Restoration Initiative should be implemented within the first year of Phase II, to foster continuity between Phase I and Phase II. In order to achieve this goal, aspects of the revised program design must be implemented in a particular order (Figure 12). For example, the officer of Budget Allocation must be hired within the first three months so that he or she can hire the financial management team within the first half of 2016. New Advisory Board member appointments, which are administratively simpler than hiring staff, will occur in the first two months of 2016.

As established by this program design, the Advisory Board will meet quarterly, and meeting details will be advertised to the public one month in advance. The Advisory Board will then have 30 days to submit their written recommendations to the Task Force.

The EAGL reporting system will be phased in over the first nine months of 2016. The Act mandates that the comprehensive restoration report on the overall health of the Great Lakes be submitted to Congress no later than 90 days after the end of the fiscal year (S.504, 2015). The Act also states that the Office of Management and Budget, in coordination with the governor of each Great Lake state must submit the annual crosscut budget report to Congress for the previous fiscal year no later than 45 days after the president proposes his budget to Congress, which normally occurs on October 1st (S.504, 2015).

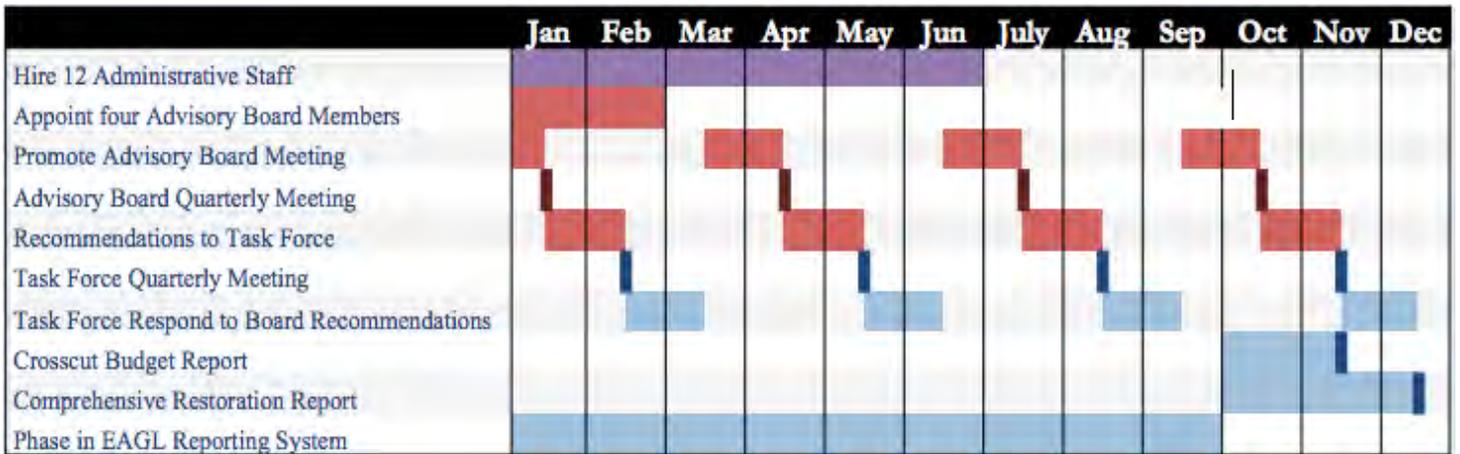


Figure 12. FY2016 master calendar for program implementation of the Restoration Initiative in the first year of Phase II. The timeline for hiring of National Program Office employees is shaded in purple. The Advisory Board and Interagency Task Force timeline are shaded in red and blue respectively, with the darkly shaded boxes representing hard deadlines.

Conclusion

The Great Lakes region is faced with a myriad of connected economic and ecological challenges. These require the best science and managerial practices in order to improve local ecosystems and develop the regional economy. From 2010 to 2014, the Great Lakes Restoration Initiative provided the administrative framework to do this work. Under the Great Lakes Ecological and Economic Protection Act of 2015, the Restoration Initiative would be authorized for another five years. The Act would permanently establish the program framework established during Phase I while leaving latitude for the modifications detailed in this report. The primary components of the program design outlined above are the Interagency Task Force, the Great Lakes National Program Office, the Advisory Board, and a mandate for more accountability and transparency through annual reports to Congress.

The ground-level work of toxic substance remediation, nutrient reduction, native species and habitat conservation, and invasive species prevention is best performed by agency personnel and local stakeholders. Indeed the Act authorizes \$475 million annually to do just that. However, a central administrative structure is necessary for the effective implementation of this program. Clearly defining the responsibilities of administrative bodies and the interactions between these organizations, the process of how program funds are allocated, how results from projects will be measured, and a timeline for all of this are details that will determine the success of the program. The effective management and implementation of such details within the framework of the Great Lakes Restoration Initiative will ensure the continued viability of Great Lakes ecosystems and the economies that depend on them for generations to come.

Works Cited

- Alexander, Jeff. (2014). Michigan's toxic fish face long recovery, state finds. Bridge. Retrieved from <http://bridgemi.com/2014/02/michigans-toxic-fish-face-long-recovery-state-finds/>.
- Austin, J., Anderson, S., Courant, P., & Litan, R. (2015). Healthy Waters, Strong Economy: The Benefits of Restoring the Great Lakes Ecosystem. Washington DC: The Brookings Institution.
- Bump, Philip (2015). Jim Inhofe's snowball has disproven climate change once and for all. Washington Post. Retrieved from <http://www.washingtonpost.com/news/the-fix/wp/2015/02/26/jim-inhofes-snowball-has-disproven-climate-change-once-and-for-all/>.
- Buono, Regina, Zodrow, Katherine. (2015). The WOTUS Rule: Overdue Necessity Or Unnecessary Overburden?. Forbes. from <http://www.forbes.com>.
- Congressional Budget Office. (2012). Comparing the Compensation of Federal and Private-Sector Employees. Retrieved from www.cbo.gov/sites/default/files/cbofiles/attachments/01-30-FedPay.pdf.
- Dumas, Carol. (2015). Army Corps memos disparage EPA over WOTUS. Capital Press. Retrieved from <http://www.capitalpress.com>.
- Environment and Public Works. (2015). EPW Committee Approves S. 1140, the Federal Water Quality Protection Act. Retrieved from <http://www.epw.senate.gov/public/index.cfm/press-releases-republican?ID=0AAEA7B9-5116-4FA5-A58D-ACCACE2CB362>.
- Environmental Protection Agency. (2011). Revitalizing Local Waterfront Economies: Investing in the Great Lakes. Chicago: EPA.
- Environmental Protection Agency. (2012). Great Lakes: Basic Information. Retrieved from www.epa.gov/greatlakes/basicinfo.html.
- Environmental Protection Agency. (2013). Great Lakes Water - Oxygen Depletion. Retrieved from <http://www.epa.gov/glnpo/glindicators/water/oxygenb.html>.
- Environmental Protection Agency. (2015a). About the Great Lakes National Program Office (GLNPO). Retrieved from www2.epa.gov/aboutepa/about-great-lakes-national-program-office-glnpo.
- Environmental Protection Agency. (2015b). Atmospheric Deposition of Toxic Pollutants. Retrieved from www.epa.gov/glnpo/glindicators/air/airb.html.
- Environmental Protection Agency. (2015c). EPA Region 5. Retrieved from <http://www2.epa.gov/aboutepa/epa-region-5>.
- Environmental Protection Agency. (2015d). Great Lakes Areas of Concern (AOCs). Retrieved from <http://www.epa.gov/greatlakes/aoc/>.

Environmental Protection Agency. (2015e). Great Lakes Restoration Initiative. Retrieved 9 October 2015, from <http://greatlakesrestoration.us>.

Environmental Protection Agency. (2015f). Nutrient Policy and Data: Great Lakes. Retrieved from www2.epa.gov/nutrient-policy-data/great-lakes.

Environmental Protection Agency. (2015g). Persistent Organic Pollutants: A Global Issue, A Global Response. Retrieved from <http://www2.epa.gov/international-cooperation/persistent-organic-pollutants-global-issue-global-response>.

Environmental Protection Agency. (2015h). Priorities. Retrieved from <http://greatlakesrestoration.us/priorities.html>.

Environmental Protection Agency. (2015i). Salaries and Benefits. Retrieved from www2.epa.gov/careers/salaries-and-benefits.

Environmental Protection Agency. (2015j). Susan Hedman, Administrator for EPA's Region 5 Office in Chicago. Retrieved from www2.epa.gov/aboutepa/susan-hedman-administrator-epas-region-5-office-chicago.

Environmental Protection Agency. (2015k). The Great Lakes National Program Office. Retrieved from <http://www2.epa.gov/aboutepa/about-great-lakes-national-program-office-glnpo>.

Environmental Protection Agency. (2015l). What is GLWQA? Great Lakes Water Quality Agreement (GLWQA). Retrieved from <http://www2.epa.gov/glwqa/what-glwqa>

Fond Du Lac Band, of Lake Superior Chippewa. (2015). FDL Resource Management - Natural Resources Wild Rice. Retrieved from <http://www.fdlrez.com/RM/wildrice.htm>.

Government Accountability Office. (2015). Great Lakes Restoration Initiative: Improved Data Collection and Reporting Would Enhance Oversight. GAO-15-526. Retrieved from www.gao.gov/assets/680/671543.pdf.

Government Accountability Office. (2015). Some Information on Projects and Progress Made Available to Congress and the Public. (1st ed.). Retrieved from <http://www.gao.gov/assets/680/672836.pdf>.

Government Performance and Results Act of 1993, 31 USC §1101.

GovTrack. (2015a). Analysis Methodology. Retrieved from <https://www.govtrack.us/about/analysis#prognosis>.

GovTrack. (2015b). H.R. 223: Great Lakes Restoration Initiative Act of 2015. Retrieved from <https://www.govtrack.us/congress/bills/114/hr223>.

GovTrack. (2015c) S. 504: Great Lakes Ecological and Economic Protection Act of 2015. Retrieved from <https://www.govtrack.us/congress/bills/114/s504>.

Great Lakes Advisory Board. (2015a). Great Lakes Advisory Board. Retrieved from <http://glri.us/advisory/index.html>.

Great Lakes Advisory Board. (2015b). Letter from ad hoc Information Subcommittee re: Financial Support. Retrieved from glri.us/advisory/pdfs/qlab-financial-support-20150615.pdf.

Great Lakes Commission. (2015). About us. Retrieved from <http://glc.org/about/>.

Great Lakes Dredging Team. (2013). Beneficial Use Of Dredged Material In The Great Lakes. Retrieved from <http://greatlakesdredging.net/files/pdf/2013BeneficialUse-online-FINAL.pdf>.
Great Lakes Ecological and Economic Protection Act of 2015, S. 504, 114th Cong. (2015).

Great Lakes Restoration Initiative. (2011). User's Guide for the Great Lakes Restoration Initiative Accountability System (GLAS). (1st ed.). Retrieved from http://www.greatlakesrestoration.us/pdfs/GLASv1.1_reporting_guidance.pdf

Great Lakes Restoration Initiative. (2015a). 'Environmental Protection Agency GLRI Projects' N.p.

Great Lakes Restoration Initiative. (2015b). Great Lakes Restoration Initiative 2015 Request for Applications. Retrieved from <http://www2.epa.gov/great-lakes-funding/great-lakes-restoration-initiative-2015-request-applications>.

Great Lakes Restoration Initiative. (2015c). Priorities. Retrieved from <http://greatlakesrestoration.us/priorities.html#cleaning>.

Great Lakes Restoration Initiative. (2015d). Report to Congress and the President (FY2010-2014). Retrieved from http://greatlakesrestoration.us/pdfs/21050720-report_to_congress.pdf.

Great Lakes Interagency Task Force. (2010). Great Lakes Restoration Initiative Action Plan. Retrieved from www.greatlakesrestoration.us/pdfs/glri_actionplan.pdf.

Great Lakes Interagency Task Force. (2014a). Great Lakes Restoration Initiative Action Plan II. Retrieved from www.greatlakesrestoration.us/actionplan/pdfs/glri-action-plan-2.pdf.

Great Lakes Interagency Task Force. (2014b). Science-Based Adaptive Management Process for Great Lakes Restoration Initiative Plan II (Draft, November 26, 2014). Retrieved from <http://greatlakesrestoration.us/advisory/pdfs/science-based-adaptive-mgmt-process-draft-20141126.pdf>.

Hackbarth, Sean. (2015). A Wyoming Rancher's Case Shows Why So Many Businesses Are Worried About EPA's Water Rule. U.S. Chamber of Commerce. Retrieved from <https://www.uschamber.com/above-the-fold/>.

Healing Our Waters Coalition. (2015a). Belle Isle's South Fishing Pier Attracts Fish and Fishermen Once Again. Healing Our Waters-Great Lakes Coalition. Retrieved from <http://healthylakes.org/successes/restoration-success-stories/belle-isles-south-fishing-pier-attracts-fish-and-fishermen-once-again/>.

Healing Our Waters Coalition. (2015b). History and Structure. Healing Our Waters-Great Lakes Coalition. Retrieved from <http://healthylakes.org/history-and-structure/>.

Internal Revenue Service. (2015). 2015 Standard Mileage Rates. Notice 2014-79. Retrieved from www.irs.gov/pub/irs-drop/n-14-79.pdf.

International Joint Commission. (2014). A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms. Report of the Lake Erie Ecosystem Priority. Washington D.C., Canadian Electronic Library. PDF.

James Inhofe U.S. Senator for Oklahoma. (2006). Opening Statement by Senator James M. Inhofe Hearing on the Great Lakes Restoration Plan. Retrieved from <http://www.inhofe.senate.gov/epw-archive/press/bopening-statement-by-senator-james-m-inhofebr-hearing-on-the-great-lakes-restoration-planbr/b>

James Inhofe U.S. Senator for Oklahoma. (2015). Energy/Environment . Retrieved from <http://www.inhofe.senate.gov/issues/energy-environment>.

Jenks, Albert E. (1900). The Wild Rice gatherers of the Upper Lakes: A Study in American Primitive Economics. Government Printing Office, Washington. (Annual report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution; v. 19, pt. 2, pp. 1013-1137).

Johnson, Mark (2015). Obama proposes cuts to Great Lakes Restoration Initiative in 2016 budget. Petoskey News. Retrieved from http://www.petoskeynews.com/featured-pnr/obama-proposes-cuts-to-great-lakes-restoration-initiative-in-budget/article_46a73896-c38c-5f09-90f6-557c13496b5d.html.

Koslow, M. (2013). Taken by Storm: How Heavy Rain is Worsening Algal Blooms in Lake Erie. Ann Arbor, MI: National Wildlife Federation.

Latham, G., Borgogni, L., & Petitta, L. (2011). Goal setting and performance management in the public sector. *International Public Management Journal*, 11(4), 385-403.

Mitch McConnell U.S. Senator for Kentucky. (2015). Finalized EPA Regs: Probably Illegal, Would Hurt the Middle Class and Won't Meaningfully Affect Global Climate. Retrieved from <http://www.mcconnell.senate.gov>.

Michigan Department of Natural Resources. (2015). Belle Isle Park Annual Report. February 2014 - February 2015. Retrieved from https://www.michigan.gov/documents/dnr/BI_2014anrprt_491994_7.pdf.

Minnesota Pollution Control Agency. (2013). St. Louis River Area of Concern Implementation Framework: Roadmap to Delisting. LimnoTech.

National Oceanic and Atmospheric Administration. (2011). Jobs and Dollars: Big Returns from Coastal Habitat Restoration. NOAA.

National Wildlife Federation. (2015). Invasive Species. Retrieved from <https://www.nwf.org/Wildlife/Threats-to-Wildlife/Invasive-Species.aspx>.

Nature Conservancy (2012). New Federal Funding Will Help The Nature Conservancy Protect and Restore the Great Lakes. Retrieved from <http://www.nature.org/ourinitiatives/regions/northamerica/areas/greatlakes/newsroom/glri-funding.xml>.

Natural Resources Conservation Service. (2011). Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Great Lakes Region. Conservation Effects Assessment Project (CEAP). Retrieved from http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045480.pdf.

Natural Resources Defense Council (2015). NRDC Urges the New York Legislature to Support Our Ocean and Great Lakes, from http://switchboard.nrdc.org/blogs/achase/nrdc_urges_the_new_york_legisl.html.

OnTheIssues. (2015a). James Inhofe. Retrieved from http://www.ontheissues.org/Senate/James_Inhofe.htm.

OnTheIssues. (2015b). John Boehner. Retrieved from http://www.ontheissues.org/OH/John_Boehner.htm.

OnTheIssues. (2015c). Mitch McConnell. Retrieved from http://www.ontheissues.org/Senate/Mitch_McConnell.htm.

OnTheIssues. (2015d). Paul Ryan. Retrieved from http://www.ontheissues.org/House/Paul_Ryan.htm.

Paul Ryan Representative in Wisconsin's 1st Congressional District. (2015). Environment. Retrieved from <http://paulryan.house.gov/issues/issue/?IssueID=9976>.

Press Office, Speaker Ryan (2009). Democratic Leaders Should Scrap Bill that Contains Biggest Discretionary Spending Hike Since Jimmy Carter, Pass Clean Bill That Holds Line on Government Spending, GOP Leaders Urge. Retrieved from <http://www.speaker.gov/press-release/boehner-house-republican-leaders-call-federal-spending-freeze-address-growing-budget>.

Press Office, Speaker Ryan. (2015). Speaker Boehner on the Latest EPA Power Grab. Retrieved from <http://www.speaker.gov/press-release/speaker-boehner-latest-epa-power-grab>.

Rosaen, Alex (2012). The Costs of Aquatic Invasive Species to Great Lakes. Anderson Economic Group LLC. Retrieved from http://greatlakesresilience.org/sites/default/files/library_reference_2012_AndersonEconomicGroup_TheCostOfAISToGreatLakesStates.pdf.

Rothlisberger, J. D., Finnoff, D. C., Cooke, R. M., & Lodge, D. M. (2012). Ship-borne Nonindigenous Species Diminish Great Lakes Ecosystem Services. *Ecosystems* 15(3):1-15.

Russo, Michael. (2015). Telephone interview with Michael Russo regarding structure of the GLNPO office. Date: 8 October 2015.

Sheikh, Pervaze. (2013). The Great Lakes Restoration Initiative: Background and Issues. Congressional Research Service. Retrieved from <https://www.fas.org/sgp/crs/misc/R43249.pdf>.

Sierra Club. (2015). Demand Great Lakes Funding Protects Lake Erie. Retrieved from <https://secure.sierraclub.org>.

org/site/Advocacy?cmd=display&page=UserAction&id=13934.

Southeast Michigan Council of Governments. (2013). Great Lakes Green Streets Guidebook. Retrieved from http://merrillville.in.gov/document_center/Great_Lakes_Green_Streets_Guidebook___August__2013.pdf

Tammy Baldwin U.S. Senator for Wisconsin. (2015). Senators Baldwin, Stabenow and Kirk Introduce Bipartisan Legislation to Protect and Restore the Great Lakes. Retrieved from <http://www.baldwin.senate.gov/press-releases/baldwin-stabenow-and-kirk-great-lakes>.

The Statistics Portal. (2015). Average daily rate of hotels in the United States from 2001 to 2015 (in U.S. dollars). Retrieved from www.statista.com/statistics/195704/average-hotel-room-rate-in-the-us-since-2005/.

U.S. Government Publishing Office. (2004). Executive Order 13340-Establishment of Great Lakes Task Force and Promotion of A Regional Collaboration of National Significance for the Great Lakes. PDF Retrieved from <http://www.gpo.gov/fdsys/pkg/WCPD-2004-05-24/pdf/WCPD-2004-05-24-Pg918-2.pdf>.

U.S. Government Accountability Office. (2013). Great Lakes Restoration Initiative: Further Actions Would Result in More Useful Assessments and Help Address Factors that Limit Progress. Retrieved from <http://www.gao.gov/assets/660/658265.pdf>.

U.S. Government Accountability Office. (2015). Great Lakes Restoration Initiative: Improved Data Collection and Reporting Would Enhance Oversight. Retrieved from <http://www.gao.gov/assets/680/671543.pdf>.

U.S. Office of Personnel Management. (2015). Salary Table 2015-CHI. Retrieved from www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2015/CHI.pdf.

Wines, Michael (2014). Behind Toledo's Water Crisis, a Long-Troubled Lake Erie. New York Times. Retrieved from http://www.nytimes.com/2014/08/05/us/lifting-ban-toledo-says-its-water-is-safe-to-drink-again.html?_r=1.

World Health Organization (2015). Chemical hazards in drinking-water - microcystin-LR. Retrieved from http://www.who.int/water_sanitation_health/dwq/chemicals/microcystin/en/.



Source: Lloyd DeGrane, Alliance for the Great Lakes